

جمهورية مصر العربية



وزارة التربية والتعليم
والتعليم الفني

نموذج إجابة

امتحان شهادة إتمام الدراسة الثانوية العامة

للعام الدراسي ٢٠١٧/٢٠١٦ - الدور الأول

المادة : التفاضل والتكامل (باللغة العربية)

نموذج



لكل مجموعة
مقدّر ومراجع

الدرجة	المجموعة من إلى
٧	١ ← ٥
٥	٦ ← ٨
٦	٩ ← ١٢
٧	١٣ ← ١٦
٥	١٧ ← ١٨
٣٠	المجموع

-١

الحل
$$\Delta (x-2)$$

-٢

الحل
$$\Delta x + x^2$$

-٣

الحل
$$\Delta x + x^2$$

-٤-

$$\text{حل: } \frac{1}{x^2} = x^{-2} \Rightarrow \frac{d}{dx} x^{-2} = -2x^{-3} = -\frac{2}{x^3}$$

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$$\text{٦ عند } x = 1 \Rightarrow \frac{d}{dx} x^{-2} = -2x^{-3} = -\frac{2}{1^3} = -2$$

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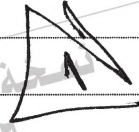
$$\text{٦ عند } x = 1 \Rightarrow \frac{d}{dx} x^{-2} = -2x^{-3} = -\frac{2}{1^3} = -2$$

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٦-



$$\frac{1}{x} =$$



حل

٧-

حل آخر:

$$\begin{aligned} \frac{1}{x} &= \frac{1 - \varepsilon - 1 - \varepsilon}{\varepsilon(1 - \varepsilon)} = \frac{-2\varepsilon}{\varepsilon(1 - \varepsilon)} = \frac{-2}{1 - \varepsilon} \\ \frac{1}{x} &= \frac{1 + \varepsilon - 1 + \varepsilon}{\varepsilon(1 + \varepsilon)} = \frac{2\varepsilon}{\varepsilon(1 + \varepsilon)} = \frac{2}{1 + \varepsilon} \end{aligned}$$

$$\frac{1}{x} = \frac{\frac{2}{1 - \varepsilon} - \frac{2}{1 + \varepsilon}}{\frac{2}{1 - \varepsilon} - \frac{2}{1 + \varepsilon}} = \frac{\frac{2(1 + \varepsilon) - 2(1 - \varepsilon)}{(1 - \varepsilon)(1 + \varepsilon)}}{\frac{2(1 + \varepsilon) - 2(1 - \varepsilon)}{(1 - \varepsilon)(1 + \varepsilon)}} = \frac{4\varepsilon}{4\varepsilon} = 1$$

$$\frac{1}{x} = \frac{1 - x \times \frac{2}{1 - \varepsilon} - 1 \times \frac{2}{1 + \varepsilon}}{\frac{1}{x} - \frac{2}{1 - \varepsilon}} = \frac{1 - \frac{2x}{1 - \varepsilon} - \frac{2}{1 + \varepsilon}}{\frac{1}{x} - \frac{2}{1 - \varepsilon}}$$

$$\frac{1}{x} = 1$$

٨-

$$\frac{1}{x} = \frac{3}{5} \Rightarrow \frac{1}{x} = \frac{3}{5} \Rightarrow \frac{1}{x} = \frac{3}{5}$$

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$$\frac{1}{x} - \frac{1}{y}$$

لكل



$$\frac{1}{x} - \frac{1}{y}$$

لكل

١٢-

الحل: $\textcircled{1}$ في كل بداية h هو h
 $\frac{1}{h} (f(h) - f(0)) = \frac{1}{h} (h^2 - 0) = h$

\triangle $\frac{1}{h} (f(h) - f(0)) = h$
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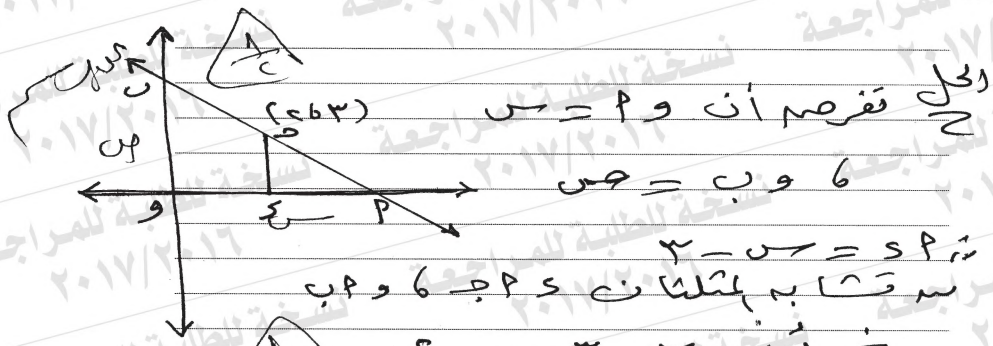
\triangle $\frac{1}{h} (f(h) - f(0)) = h$
 $\frac{1}{h} (h^2 - 0) = h$

\triangle $\frac{1}{h} (f(h) - f(0)) = h$
 $\frac{1}{h} (h^2 - 0) = h$

١٣-

الحل ١٥ $\frac{1}{2} + \frac{1}{3} + \frac{1}{6} = 1$

١٤-



بـ $u = 3$ و $u = 6$ و $u = 9$

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الحل

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الحل

نقط التقاطع $y = x$



$y = x$ $y = x$ $y = x$



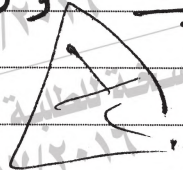
المساحة = $\frac{1}{2} \times \text{القاعدة} \times \text{الارتفاع}$



$= \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} = \frac{1}{8}$

$= \frac{1}{8} \times \frac{1}{2} = \frac{1}{16}$

نقطة التقاطع $y = x$ ومساحة



-١٧-

الحل: نقط التقاطع $\begin{cases} y = 3 - x^2 \\ y = x^2 - 9 \end{cases}$

$$3 - x^2 = x^2 - 9$$

$$2x^2 = 12 \Rightarrow x^2 = 6 \Rightarrow x = \pm \sqrt{6}$$

$$y = 3 - (\sqrt{6})^2 = 3 - 6 = -3$$

$$y = 3 - (-\sqrt{6})^2 = 3 - 6 = -3$$

$$A = \int_{-\sqrt{6}}^{\sqrt{6}} (3 - x^2 - (x^2 - 9)) dx = \int_{-\sqrt{6}}^{\sqrt{6}} (12 - 2x^2) dx$$

$$= \left[12x - \frac{2}{3}x^3 \right]_{-\sqrt{6}}^{\sqrt{6}} = \left(12\sqrt{6} - \frac{2}{3}(\sqrt{6})^3 \right) - \left(-12\sqrt{6} + \frac{2}{3}(\sqrt{6})^3 \right)$$

$$= 24\sqrt{6} - \frac{4}{3}(\sqrt{6})^3 = 24\sqrt{6} - \frac{4}{3}(6\sqrt{6}) = 24\sqrt{6} - 8\sqrt{6} = 16\sqrt{6}$$

-١٨-

الحل: أ) $\lim_{x \rightarrow \infty} \frac{1 + \frac{1}{x}}{1 + \frac{1}{x}}$

$$= \lim_{x \rightarrow \infty} \left(\frac{1 + \frac{1}{x}}{1 + \frac{1}{x}} \right) = \lim_{x \rightarrow \infty} 1 = 1$$

ب) $\lim_{x \rightarrow \infty} \left(\frac{1}{x} - \frac{1}{x^2} \right)$

$$= \lim_{x \rightarrow \infty} \frac{1}{x} - \lim_{x \rightarrow \infty} \frac{1}{x^2} = 0 - 0 = 0$$

(انتهت الإجابة وتراعى الحلول الأخرى)